

AN ANNOTATED LIST OF THE THYSANOPTERA KNOWN
FROM INDIA AND CEYLON

BY

T. V. RAMAKRISHNA AIYAR

Agricultural College, Coimbatore.

In 1919 the writer published a small note ¹ on Indian Thysanoptera, and it may be gathered from it that prior to 1912 hardly anything of importance was known or on record regarding the Indian representatives of the group Thysanoptera, in spite of the fact that the group is one of the major divisions into which insects are divided and that members of this group are very commonly met with all over India; and naturally therefore, practically no attention appears to have been devoted to the scientific or economic importance of these insects in India. In fact the Indo-Ceylonese region practically remained a *terra incognita* to Thysanopterists till the year 1912. Prior to this period we have only two records, one of two Indian forms described by Newman ² in 1856, viz. *Idolothrips halidayi* and *Phloeothrips anacardii* collected on a species of *Anacardium* in Mysore, and another in 1909 by Kieffer ('*Cecidothrips*' from Trichinopoly, S. India) in 'Marcellia' VII. In his monograph of the order mostly including European forms, Uzel ³ has just copied the two descriptions of Newman without any further record from India, but adding one species from Ceylon *Phloeothrips stenomelas*, Wlk., the description of which is also copied from that of Walker (A. M. N. H. 1859). In 1912 Mr. Bagnall the eminent English Thysanopterist described ⁴ an interesting species of thrips *Panchetothrips indicus* from material collected and sent to the Indian Museum by the Madras Revenue Board in 1889. From the year 1913 onwards our knowledge of Indo-Ceylonese forms gradually began to increase as may be found from the series of systematic papers ⁵ on the group published by Bagnall since then. However, all forms recorded by him up to 1919, are only North Indian and Ceylonese ones, and none from South India. With regard to South India a regular collection and a study of the bionomics of South Indian Thysanoptera might be said to have commenced in 1915 when the material of 'Paddy thrips' collected by the writer and forwarded to the Imperial Bureau of Entomology, London, was described by Mr. C. B. Williams ⁶ as a new species *Thrips* (*Bagnallia*) *oryzae*. Since then all records from South India refer to material brought together by the writer and mostly collected by himself. In 1916 a small lot of South Indian forms was forwarded to Mr. J. D. Hood, the well-known American expert on the order, and he published in 1919 a paper ⁷ based on that material, and this may be regarded as the first connected paper on South Indian Thysanoptera. Meanwhile, Mr. Bagnall also kindly undertook to help, and material was submitted to him in 1919. Though he has not been able to work out the whole lot sent to him, he has been publishing descriptions of some new forms from the material, on and off since 1919. As to Ceylonese forms of the order, a fairly good number have been described by Bagnall in his

¹ On our present knowledge of 'the Indian Thysanoptera and their economic importance.' pp. 618-22. Report of the 3rd Entomological Meeting at Pusa in 1919-20.

² Transactions of the Entomological Society, London, 1856.

³ Monographie der Ordnung Thysanoptera by Heinrich Uzel, Koniggratz, 1895.

⁴ Records of the Indian Museum, p. 257, Vol. VII, 1912.

⁵ Bagnall's serial papers on the group began with paper No. 1 in 1913 and No. XIV appeared in December 1924; all in the Annals and Magazine of Natural History, London.

⁶ p. 353, Bulletin of Entomological Research, Vol. VI, London, 1915.

⁷ 'On some new Thysanoptera from South India by J. D. Hood, pp. 90-103. Insector Insectiae Menstruus,' xii, 1919, Washington.

serial papers in the Annals. The only connected paper on ceylonese forms, however, is that of Karl Schmutz¹ in 1913; the descriptions and synonymy in this paper have, however, been somewhat severely criticized by other workers, chief among them being Dr. Karny, the famous Austrian specialist on the group.

In this paper an attempt is made to catalogue the known Thysanoptera of India and Ceylon as a working reference list, and as a sort of preliminary preparation for detailed papers, whenever possible in future, on the systematics and bionomics of the Thysanoptera inhabiting the Indo-Ceylonese region.

All records as far as possible up to 1924 have been included here and it is believed the list is more or less up to date. The records include species so far known from the region divided among 47 genera. Of these about half a dozen are recently erected genera and all species except about half a dozen are new to science. Compared to the 3 or 4 forms alone that were known from the region in 1912, this addition must be admitted to be substantial. There is hardly any doubt that a good many new forms will be described from the author's unworked material² (a good portion of which is now with Dr. Karny in Java), while numerous unexplored tracts of the country are sure to contain novelties awaiting the discovery of enthusiastic workers.

Now that the importance of this order of insects, both from the scientific and economic aspects, is beginning to be realized, it is hoped, that these insects might receive the attention they really deserve, and it is believed that this list, with all its inevitable shortcomings, may serve some useful purpose, at least to those who might contemplate working at this group. The author is greatly indebted to Messrs. Hood, Bagnall, and Dr. Karny for the help received from them, and particularly to Dr. Karny for the valuable suggestions and encouragement ever since the author had the honour of his acquaintance.

The arrangement followed in the list is more or less based on the synoptical tables of Dr. Karny. It may not be out of place here to append Dr. Karny's³ synopsis of the major sub-divisions of the order, since that appears to be the most recent and perhaps, up-to-date classification. Though the greater portion of Karny's arrangement is that of Hood,⁴ the former has made some deviations. The translation⁵ of the German synopsis was made by the author himself with the help of Hood's tables, but it is not unlikely there may be some errors.

Key to the sub-divisions and families of

THYSANOPTERA

I. Female with an ovipositor formed of two pairs of gonapophyses from 8th and 9th abdominal segments. Terminal abdominal segment seldom tubular, that of female longitudinally divided beneath and usually conical, that of male usually bluntly rounded, never tubular. Wings microscopically pubescent; forewing with marginal vein and at least one longitudinal vein reaching tip.

Sub-order.....TEREBRANTIA

A. Ovipositor curved upward. Wings broad and rounded at tip. Body not depressed. Antennæ nine jointed.

Super family.....AEOLOTHRIPIDEA, Hood.

Includes only one family—AEOLOTHRIPIDÆ, Uzel.

¹ K. Schmutz-Zur Kenntnis der Thysanopterenfauna von Ceylon, pp. 991-1091 with 6 plates in Sitzber. Akad. Wiss. Math. Nat., Kl., Vienna, 1913.

² Dr. Karny has now prepared a monograph on this material submitted to him and it is being published. The paper includes 50 records, with four new genera, and eighteen new species.

³ Thysanoptera—Uebersichtstabelle. Karny, pp. 231-61. 'Treubia, vol. I, livr. 4, 1921.

⁴ An outline of the sub-families and higher groups of the order Thysanoptera by J. D. Hood, pp. 53-60, Proc. Biol. Socy., Washington, XXVIII, 1915.

⁵ Since submitting this paper to the press, the author has seen a translation of Dr. Karny's full synopsis in the Bulletin (No. 168 of the Florida University, Published December 1923) on N. American Thysanoptera by J. R. Watson.

B. Ovipositor curved downward. Wings narrower and almost always pointed at tip. Body more or less depressed. Antennæ six to eight jointed (exceptionally nine jointed).

Super family.....THRIPOIDEA, Hood.

(a) Antennæ nine segmented, without apical stylus, 3rd and 4th segments enlarged and conical without sense cones but with sensory band at apex. Fore tarsus with claw like appendage.

Family.....HETEROTHRIPIDÆ, Bagnall.

(a¹) Antennæ six to eight segmented, usually with an apical stylus of one or two segments, rarely the 6th segment with a transverse line making the antenna appear nine segmented. Segments 3 and 4 not conical, usually with sense cones, rarely with a sensory band at apex. Fore tarsus never with an appendage.

(b) Antennæ not moniliform, six to eight segmented always with a one or two jointed apical stylus, 3rd segment usually 4th always with sense cones, never with a tympanum like sense area on dorsum of apex. Pronotum without longitudinal dorsal sutures, anterior and posterior femora not enlarged. Tip of abdomen usually sharply conical. Ovipositor almost invariably well developed.

(c) Sixth antennal segment large, never small in comparison with fifth, generally the largest in the whole antenna.

(d) Last abdominal segment of female conical, not well chitinized, seldom stronger than the preceding segments, bristles on segments 9 and 10 not very long or stout, never thornlike.

Family.....THRIPIDÆ, Uzel.

(d¹) Last abdominal segment of female cylindrical, very heavily chitinized bristles on 9 and 10 segments exceptionally long, stout and thornlike.

Family.....PANCHÆOTHRIPIDÆ, Bagnall.

(c¹) Sixth or sixth and seventh antennal joints small, styliform, minute in comparison with the fifth which is the largest in the whole antenna.

Family.....CERATOTHRIPIDÆ, Bagnall.

(b¹) Antennæ moniliform eight segmented, without apical stylus, third and fourth segments without sense cones, each with a tympanum like sense area on dorsum of apex. Pronotum with longitudinal dorsal sutures, anterior and posterior femora greatly enlarged. Abdomen blunt, ovipositor very weak, probably functionless.

Family.....MEROTHRIPIDÆ, Hood.

II. Female without ovipositor. Last abdominal segment in both sexes always continuous beneath, almost invariably tubular. Wings without pubescence forewing with at most a single abbreviated median vein.

Sub-order.....TUBULIFERA

A. Maxillary palpi 2 segmented. Antennæ eight, rarely seven segmented, middle coxæ more apart from each other than front and hind coxæ. Ninth abdominal segment not or rarely longer than the eighth. Terminal abdominal hairs rarely much longer than tube.

Super family.....PHLÆOTHRIPIDEA, Hood.

(a) Last abdominal segment absolutely not tubular, greatly swollen, parabolic in dorsal aspect. Tergum of abdominal segments 2 to 9 transversely linear.

Family.....PYGOTHRIPIDÆ, Hood.

(a¹) Last abdominal segment slender, cylindrical or tubular, forming the tube. Tergum of abdominal segments 2 to 9 not transversely linear.

(b) Hind end of 8th abdominal segment without hook or cone-shaped projections.

(c) Tube (last segment) much shorter than the remaining segments together.

- (d) The third segment of antenna with strong crest-like large sense cones at its distal part.
Family.....ECACANTHOTHIRIPIDÆ,¹ Bagnall.
- (d¹) Sense cone of third antennal segment not more strongly developed than in the other segments.
- (e) Sense cone of antenna usually long and pointed; near each there is an accessory cone or a long slender bristle in addition; on this account the antennal segments are markedly swollen. The eyes are unusually large, close together, mouth cone pointed.
Family.....EUPATHITHIRIPIDÆ,¹ Bagnall.
- (e¹) Sense cone of feeler not specially well developed, eyes smaller.
- (f) Male without a tube like projection on each side of sixth abdominal segment.
- (g) Head not produced in front of the eyes, vertex not sharply conical, rarely prominently overhanging base of antennæ.
Family.....PHLOEOTHIRIPIDÆ, Uzel.
- (g¹) Head more or less produced in front beyond the eyes, vertex conical, usually over hanging base of antenna, bearing the anterior ocellus at its extremity and usually with a strong bristle in front of the eye.
Family.....IDOLOTHIRIPIDÆ, Bagnall.
- (f¹) Male with stout tube like projection on each side of the sixth abdominal segment.
Family.....MEGATHIRIPIDÆ, Karny.
- (c¹) The tube greatly elongate, three or four times as long as the head, and nearly as long as all other abdominal segments together.
Family.....HYSTRICOTHIRIPIDÆ, Karny.
- (b¹) Hind end of 8th abdominal segment with a hook or cone-shaped process, the antennæ and tube short and thick.
Family.....CHIROTHIRIPOIDIDÆ, Bagnall.

B. Maxillary palpi one jointed. Antenna four to seven segmented. Hind coxæ more widely separated than the front and middle pairs. Ninth abdominal segment longer than the eighth. Terminal bristles of abdomen much longer than the tube.

Super family.....UROTHIRIPOIDÆ, Bagnall.

Only one family.....UROTHIRIPIDÆ Bagnall.

Dr. Karny's synopsis of Keys to the known genera is not added here as it is pretty long. The Keys in the same publication (Treubia Vol. I) and the same author's numerous Keys for distinguishing the described *sp. sp.* of various genera found in the pages of Zt. fur. Wissen Insektenbiol, 1914-16, will be very useful to workers on this group.

LIST² OF INDO-CEYLONESE THYSANOPTERA

Sub-order—TEREBRANTIA

AEOLOTHIRIPIDÆ

Aeolothrips, *Haliday*

A. fulvicollis, Bagnall, p. 253. A. M. N. H., iv, 1919. In *Verbascum* flowers, very close to *A. fasciatus*, L. (Imms. Coll.), Cawnpore.

¹ Hood considers that these two families erected by Bagnall are synonyms of Phlæothripidæ Uzel, and gives reasons, *vide* pp. 7-12. Psyche, xxiii, 1916.

² Only the more important references are given under each species; the same is the case with regard to synonyms, localities and host plants.

THRIPIDÆ

Scirtothrips, Shull

- S. signipennis*, Bagnall, p. 22, A.M.N.H., xiii, 1914. Under leaf sheaths of banana.....Peradeniya, Ceylon.
S. dorsalis, Hood, p. 90. Ins. Incis. Menstr. April 1919. In shoots of castor and chillies.....Coimbatore. (Ramakrishna Coll.)

Pseudodendrothrips, Schmutz

- P. ornaticissima*, Schmutz, p. 999, Sitzber. Akad. Wiss., cxxii, 1913. On *Macrocarpus integrifolia*.....Peradeniya. Ceylon.

Dendrothrips, Uzel

- D. sexmaculatas*, Bagnall, p. 401, A. M. N. H., xvii, 1916. Peradeniya. Ceylon.
D. indicus, Bagnall, p. 261, A. M. N. H., iv, 1919. In arrow-root leaves Taliparamba, S. India. (Ramakrishna Coll.)
 Very near *sexmaculatus*, B. differing in colour of abdomen and wings.
D. bispinosus, Bagnall, p. 455, Bul. Ent. Res., xiv, 1924. On tea leavesNilgiris. (Near *D. sallatrix*, Uzel.)

Rhipiphorothrips, Morgan

- R. (Retilthrips) bicolor*, Bagnall, p. 290, A. M. N. H., xii, 1913. On vineCeylon.
R. cruentatus, Hood, p. 94, Ins. Insc. Menst., April 1919. On grape vine leaves.....Coimbatore. (Ramakrishna Coll.)
 On *Careya arborea*.....Ceylon. (Rutherford Coll.)

Selenothrips, Karny

- S. (Physopus) rubrocinctus*, Giard. Bull. Soc. Ent. France, p. 263, 1901, and also Trop. Agri., xxvii, 1906. Cacao thrips. (W. Indies). Noted also in mango in Florida.
 =*S. mendax*, Schmutz, p. 994, Sitzber. Akad. Wiss., cxxii, 1913. On *Anacardium orientale*.....Peradeniya. Ceylon.

Heliothrips, Haliday

- H. indicus*, Bagnall, p. 291, A.M.N.H., xii, 1913. On onion, brinjal, and on indigo.....Sirsiyah (Behar) and Surat (Bombay).
H. brunneipennis, Bagnall, p. 318, A. M. N. H., xv, 1915. On *Litsea* leavesPeradeniya. Ceylon.
H. minutissimus, Bagnall, p. 260, A. M. N. H., iv, 1919 in Violet flowersSurat.
H. hæmorrhoidalis, Bouche var *Ceylonica*, Schmutz, p. 992, Sitzber. Akad. Wiss., cxxii, 1913, on cacao ;.....Peradeniya. Ceylon.

Frankliniella, Karny

- F. sulphurea*, Schmutz, p. 1019, Sitzber. Akad. Wiss., cxxii, 1913; in flowers of *Thunbergia alata*.....Peradeniya. Ceylon.
 For other spp. see below under *Physothrips*.

Taeniothrips, Serville

- T. major*, Bagnall, p. 216, A. M. N. H., xvii, 1916, in *Rhododendron* flowers.....Garhwal. N. India.

Physothrips, Karny

- P. lefroyi*, Bagnall, p. 292, A. M. N. H., xii, 1913; in Tea flowers.....Darjiling; also p. 63, Bull. Ent. Res., ix, 1918.
P. usitatus, Bagnall, p. 293, A. M. N. H., xii, 1913; in flowers of *Butea frondosa*. Allahabad, N. India; *Frankliniella nigricornis* and *F. obscuricornis* of Schmutz, pp. 1020 and 1022 Sitzber, Akad. Wiss., cxxii,

- 1913 on coffee and *crotalaria* from Ceylon are according to Karny same as *P. usitatus*, Bagnall, *vide* p. 365. Zt. Fur. Wissen. Insekt, x, 1914.
- P. longiceps*, Bagnall, p. 220, A. M. N. H., xvii, 1916 in *Rhododendron*, flowers.....Garhwal. N. India.
- P. (Frankliniella) vitata*, Schmutz, p. 1023, Sitzber. Akad. Wiss., cxxii, 1913; in *Thunbergia* flowers.....Peradeniya. Ceylon.
- P. seliventris*, Bagnall, p. 61, Bull. Ent. Res., ix, 1918. On Tea.....Darjiling. N. E. India; also p. 305, Treubia, iii 1923.
- P. brunneicornis*, Bagnall, p. 218, A. M. N. H., xvii, 1916, first noted from Japan. p. 206, A. M. N. H., 1918, on Rose. Darjiling.
- P. peculiaris*, Bagnall, p. 206, A. M. N. H., i, 1918 on Lucerne. Pusa. N. India, also p. 305, Treubia, ii, 1923.
- P. minor*, Bagnall, p. 393, A. M. N. H., viii, 1921; in leaves of *Ipomea staphylina*.....Maddur, and Coimbatore, S. India (Ramakrishna Coll.)
- P. andrewesi*, Bagnall, p. 394, A. M. N. H., viii, 1921. Darjiling.
- P. flavidulus*, Bagnall, p. 628, A. M. N. H., xii, 1923; in flowers of *Eriobotrya japonica*. Dehra Dun; also noted at Bhowali (Kumaon).

Thrips, Linnaeus

- Thrips striatopennata*, Schmutz, p. 1002, Sitzber. Akad. Wiss., cxxii, 1913. on grass; Nuwara Eliya, Ceylon.
- T. florum*, Schmutz, p. 1003 do. do. do. In *Cinnamomum* flowers.....Peradeniya. Ceylon.
- (*T. magnipes*, Schmutz, p. 1006 and *T. rhodamine*, Schmutz, from Ceylon on *clerodendron* and *Rhodamnia*, p. 1008 do. do. are contracted specimens of *T. flora*, Schmutz according to Karny, *vide* p. 109, Jour. Siam. Socy., xvi, 1923.)
- T. parva*, Schmutz, p. 1004, Sitzber. Akad. Wiss., cxxii, 1913 in *Cinnamomum* flowers.....Ceylon.
- T. longalata*, Schmutz, p. 1009 do. do. do. on *Cinnamomum* and *Clerodendron* leaves.....Peradeniya. Ceylon.
- T. sulphurea*, Schmutz, p. 1011 do. do. In *Cinnamomum* flowers.Peradeniya. Ceylon.
- T. nigriflava*, Schmutz, p. 1012 do. do. do.
- T. colorata*, Schmutz, p. 1013 do. do. do.
- (This is regarded by Karny as a colour *var* of *T. florum*.)
- T. pallida*, Schmutz, p. 1015, Sitzber. Akad. Wiss., cxxii, 1913.....Peradeniya. Ceylon (Some of the above *spp.* of Schmutz are regarded as synonyms of *florum*, Sch. by Karny.)
- T. (Bagnallia) oryzae*, Williams, p. 353, Bull. Ent. Res., 1915, on young paddy, Chingleput. S. India (Ramakrishna coll.); see also p. 109, Jour. Siam. Socy., xvi, 1922, noted in Java (Karny).
- T. pallidulus*, Bagnall, p. 424, A. M. N. H., xiii, 1924.....Pusa.

Rhamphothrips, Karny.

- R. lineata*, Schmutz, p. 997, Sitzber. Akad. Wiss., cxxii, 1913. Peradeniya, Ceylon. This is described by Schmutz as *Brachythrips*. See p. 295, Zt. f. Insekt, 1914, for Karny's note.

Dendrothripoides, Bagnall.

- D. ipomeæ*, Bagnall, p. 625, A. M. N. H., xii, 1923, in leaves of *Ipomea staphylina*.....Maddur, Mysore (Ramakrishna coll.)

Euthrips Targ-Tozz.

(Hood objects to the use of the name Euthrips¹.)

- E. citricinctus*, Bagnall, p. 270, A. M. N. H., iv, 1919. On Arrow-root leaves.....Taliparamba. South India. (Ramakrishna coll.); very close to Karny's *E. flavicinctus* from Java.

¹ On proper generic names for certain Thysanoptera of economic importance Hood, pp. 34-44, Proc. Ent. Socy., Washington, xiv, 1914.

E. flavicinctus, Karny, p. 115, Marcellia, xi, 1912, in galls of *Homalomena aromatica* in Java. See also p. 55, Bull. der. Tard. Bot. Buitenzorg, x, 1913.

=*Neophysopus medioflavus*, Schmutz, p. 1017, Sitzber. Akad. Wiss., cxxii, 1913. *vide* Karny, p. 357, Zt. Fur. Wissen Insekt, 1915, Peradeniya. Ceylon.

Aptinothrips, Haliday.

A. rufus var. connaticornis, Uzel-Bagnall, p. 205, A. M. N. H., i, 1918, in Tea flowers.....Darjiling.

Perissothrips, Hood

P. parviceps, Hood, p. 92, Ins. Insc. Mens., vii, 1919, in shoots of *Ailanthus excelsa*. Coimbatore (Ramakrishna coll.) near *Chilothrips* and *oxythrips*.

Bregmatothrips, Hood.

B. Ramakrishnae, Bagnall, p. 625, A. M. N. H., xii, 1923, inside tips of rolled up sugar-cane leaves. Palur. South India (Ramakrishna coll.)

Tryphactothrips, Bagnall.

Dinurothrips rutherfordi, Bagnall, p. 319, A. M. N. H., xv, 1915.

=*Tryphactothrips* do. Bagnall, p. 257.

do. iv, 1919.

On *allamanda* leaves. See also p. 264. do. do. 1921. Ceylon.

This is the type of Bagnall's genus.

T. octarticulata, Schmutz, p. 993, Sitzber. Akad. Wiss., cxxii, 1913. Peradeniya. Ceylon. This species is described by Schmutz as a *Parathenothrips*, Uz.

Bagnall is of opinion that '*Dinurothrips*' should be placed near *Heliothrips* and not with *Panchætothrips*.

PANCHÆTOTHRIPIDÆ

Panchætothrips, Bagnall

P. indicus, Bagnall, p. 257, Rec. Ind. Mus., 1912, on *Curcuma longa*..... Madras, also on Arrow-root leaves, Taliparamba. S. India. (Ramakrishna coll.)

Sub-order—TUBULIFERA

ECACANTHOTHRIPIDÆ

Ecacanthothrips, Bagnall.

E. sanguineus, Bagnall, p. 321, A. M. N. H., xv, 1915, and also p. 201. Rec. Ind. Mus., 1913.

= *Acanthothrips sanguineus*, Bagnall (1908)

= *ormothrips sanguineus*, Buffa (1910)

= *Do. steinsky*, Schmutz. (1913)

(See p. 277, 'Treubia,' iii, 1923, for these synonyms.) Under tree bark; recorded from Peradeniya, Ceylon,—and North India.

PHLÆOTHRIPIDÆ

Phlæothrips, Haliday

P. anacardii, Newman, p. 266, Trans. Ento. Soc., 1855, on *Anacardium*. Mysore.

P. stenomelas, Walker, p. 224, A. M. N. H., 1859.....Ceylon.

Liothrips, Uzel

L. ordinarius, Hood, p. 101, Insc. Mens., vii, 1919, in shoots of *Sesbania grandiflora*.....Coimbatore. (Ramakrishna coll.)

L. niger, Schmutz, p. 1080, Sitzber. Akad. Wiss., cxxii, 1913, Peradeniya. Ceylon; described as an *Ischyrothrips*. See also reference by Karny pp. 46 to 49, Treubia, ii, 1921.

L. sp. Kieffer, 'Marcellia,' 1905 in galls of *Quercus apicata*. North India.

Dolichothrips, Karny

- D. varipes*, Bagnall, p. 359, A. M. N. H., vii, 1921, on wild bush. Coimbatore. (Ramakrishna coll.)

Cephalothrips, Uzel

- C. hispanicus*, Bagnall, p. 629, A. M. N. H., 1923, in *Rhododendron* flowers.
.....Garhwal, North India.
= *Matacothrips*, Bagnall. See p. 635, A. M. N. H. (9), xiv, 1924.

Hindsiana, Karny

- H. apicalis*, Bagnall, p. 323, A. M. N. H., xv, 1915, on jungle plant ;
.....Almora, North India.

Haplothrips, Serville

- H. tenuipennis*, Bagnall, p. 210, A. M. N. H., i, 1918, on Tea bushes and rose.
.....Darjiling. (Andrews coll.)
H. pictipes, Bagnall, p. 273, A. M. N. H., iv, 1919, on diseased pepper berries.....Talparamba, South India. (Ramakrishna coll.)
H. terminalis, Schmutz, p. 1033, Sitzber. Akad. Wiss., cxxii, 1913, on bamboo.....Ceylon. See also 'Treubia,' ii, p. 32, 1921. Karny thinks this is probably a *Mesothrips*.
H. ceylonica, Schmutz, p. 1038, Sitzber. Akad. Wiss., cxxii, 1913, in *Crotalaria* flowers.....Peradeniya. Ceylon.
H. soror, Schmutz, p. 1039. do. do. do. Ceylon.
H. ganglbaueri, Schmutz, p. 1034. do. do. do. Peradeniya. Ceylon.
H. sororcula, Schmutz, p. 1036. do. do. do. in *Crotalaria* flowers.
.....Peradeniya. Ceylon.

A long note by Karny on this genus and some Ceylon spp. of Schmutz is found on p. 87, Zt. fur. Wiss. Insekt, xi, 1915.

Neoheegeria, Schmutz

- N. fumipennis*, Bagnall, p. 360, A. M. N. H., vii, 1921. Kurseong. Himalayas. (Gravely coll.)
N. citripes, Bagnall, p. 360. do. do. an *Abutilon indicum*.....Pusa.
N. indica, Hood, p. 96, Ins. Insc. Mens., vii, 1919, in *Ailanthus excelsa* shoots. Coimbatore. (Ramakrishna coll.)
N. zizyphi, Bagnall, p. 629, A. M. N. H., xii, 1923, on *Zizyphus rugosa*, Paresnath, Bengal.

Cecidothrips, Kieffer

- C. bursarum*, Kieffer, p. 165, 'Marcellia,' vii, 1909, from unknown plant galls. Trichinopoly, South India.

Cænurothrips, Bagnall

- C. affinis*, Bagnall, p. 361, A. M. N. H., vii, 1921, among cotton. Ceylon.

Austrothrips, Brethes

- A. cochinchinensis*, Karny, p. 113, Jour. Siam. Socy., xvi, 1923. Very common in galls of *Calycopteris floribunda*. Western Ghats. (Y. R. Rao and Ramakrishna coll.)

Originally described by Karny from Siam collected in leaf galls of *Hymenodictyon parviflorum*. (See also p. 436, Agrl. Jour. India, July 24.)

Trichothrips, Uzel

- T. (Neosmerinthothrips) fructuum*, Schmutz, p. 1052, Sitzber. Akad. Wiss., cxxii, 1913.....Peradeniya. Ceylon.

Eunorphothrips, Schmutz

- E. albicornis* Schmutz, p. 1050, Sitzber. Akad. Wiss., cxxii, 1913, in *Cinnanomum* flowers.....Peradeniya. Ceylon.
(See pp. 145 and 147 of Zt. Fur. Wiss. Insekt, xi, 1915 for notes by Karny.)

Androthrips, Karny

A. flavipes, Schmutz, p. 1031, Sitzber. Akad. Wiss., cxxii, 1913, Ceylon.

A. flavipes, Bagnall, p. 27, A. M. N. H., xiii, 1914. Ceylon; On *Memexylon*.

Under the same name the above two spp. are described by different authors and it is not known whether the two are synonymous. See p. 94, Zt. Fur. Wiss. Insekt, xi, 1915, where some differences are noted by Karny.

Aleurodothrips, Franklin

A. fasciapennis, Franklin-Bagnall, p. 324, A. M. N. H., xv, 1915, among scale insect sp. *Aspidiotus lalaniae*. Ceylon, described by Franklin in 1908, p. 727, Proc. U. S. Nat. Museum., xxxiii.

Gynaikothrips, Zimmerman=*Chromatothrips*, Schmutz

G. karnyi, Bagnall, p. 28, A. M. N. H., xiii, 1914, in marginal leaf galls of pepper. Peradeniya. Ceylon.

G. mirabilis, Schmutz, p. 1041, Sitzber. Akad. Wiss., cxxii, 1913. on *Pavetta hispida*. Ceylon.

G. (chromatothrips) fasciata, Schmutz, p. 1044, Sitzber. Akad. Wiss., cxxii, 1913. Peradeniya. Ceylon.

G. (chromatothrips) annulicornis, Schmutz, p. 1045 do. do. do.

G. (chromatothrips) plantaginis, Schmutz, p. 1047 do. Nuwara Eliya. Ceylon.

G. watsoni, Karny, p. 104, Ent. Mitteil., ix, 1920, Bentotta. Ceylon

Cryptothrips, Uzel

C. longus, Schmutz, p. 1054, Sitzber. Akad. Wiss., cxxii, 1913, on *Pavetta*. Ceylon.

This and another *C. pavethae* on p. 1055 above are described as '*Mesothrips*.' Karny considers them to be *Cryptothrips* and synonyms.

Arrhenothrips, Hood

A. Ramakrishnae, Hood, p. 99, Ins. Insc. Mens., vii, 1919, producing galls in leaves of *Minusops elengi*, Combatore. (Ramakrishna coll.)

Mr. Bagnall in his recent paper¹ considers this insect to be a *Mesothrips* close to *M. lewisi*, B., though Karny disagrees with this view.

Mesothrips, Zimmerman

M. indicus, Bagnall, p. 365, A. M. N. H., vii, 1921, from *Sal* bark. Dehra Dun. N. India.

Mr. Bagnall in his recent paper describes the following *Spp.* of *Mesothrips* from this region.

M. brevis, B., p. 636, A. M. N. H., xiv, 1924, in pepper galls, Ceylon with *Androthrips flavipes*, Sch.

M. angusticornis, B., p. 638 do. do. on bushes, Peradeniya, Ceylon.

M. karnyi, B., p. 639 do. do. in pods of *Albizzia lebeck* Dehra Dun, N. India.

Ischyrothrips, Schmutz

I. crassus, Schmutz, p. 1076, Sitzber. Akad. Wiss., cxxii, 1913, in *Bauhinia triandra* shoots. Ceylon.

I. obscurus, Schmutz, p. 1074 do. do. do. do. Karny thinks this may be a *Mesothrips*.

I. niger, Schmutz, p. 1080 do. do. do. Peradeniya Ceylon.

¹ Annals and Magazine of Natural History, xiv, December 1924.

Dinothrips, Bagnall

- D. sumatrensis*, Bagnall, p. 11, Trans. Nat. Hist. Soc. Northhul, iii, 1908.
For synonyms see 'Treubia,' iii, p. 293, 1923. See also p. 203, Phil. Jour.
Soc., xvii, 1920. Burma. Philippines.
- D. furcifer*, Schmutz, p. 1026, Sitzber. Akad. Wiss., cxxii, 1913.....
Peradeniya. Ceylon.

Diaphorothrips, Keryn

- D. unguipes*, Karyn. p. 186, Ent. Mftteil., iv, 1920. Bentotta. Ceylon ;
also p 299, Treubia, iii, 1923.

IDOLOTHRIPIDÆ

Dicaiothrips, Buffa

- D. dalla-torrensis*, Schmutz, p. 1067, Sitzber. Akad. Wiss. Vien., 1913
Ceylon ; referred to by Karyn also, p. 65, Treubia ii, 1921, from Java.
- D. proximus*, Bagnall, p. 289. A. M. N. H., xiii, 1914, in *Crotalaria* pods.
Ceylon.
- D. greeni*, Bagnall, p. 289, A. M. N. H., xiii, 1914, from decayed pods of
Phaseolus.....Ceylon.
- D. levis*, Schmutz, p. 1072, Sitzber. Akad. Wiss., cxii, 1913. Peradeniya, Ceylon.
do. do. Karyn, p. 189, Ent. Mittel., ix, 1920. Puttalam, Ceylon.
- D. crassiceps*, Bagnall, p. 399, A. M. N. H., viii, 1921.....Burma.
- D. procer*, Schmutz, p. 1063, Sitzber. Akad. Wiss., cxxii, 1913. Ceylon.
- D. novus*, Schmutz, p. 1066, Sitzber. Akad. Wiss., cxxii, 1913. Ceylon.
- D. bruneitarsis*, Schmutz, p. 1070. do. do. Peradeniya. Ceylon.

Gigantothrips, Zimmerman

- G. tibialis*, Bagnall, p. 364, A. M. N. H., vii, 1921, on *Caryea aroboea*.....
.....Ceylon.
- G. spinosus*, Schmutz, p. 1078, Sitzber. Akad. Wiss., cxxii, 1913, Ceylon.
(This is described as an *Ischyrothrips* by Schmutz.)

Phoxothrips, Karyn

- P. breviceps*. Bagnall, p. 380, A. M. N. H., xiv, 1914.....Simla.
Kleothrips, Schmutz*=*Dracothrips*, Bagnall (1914) near *Mecynothrips*.
- K. gigans*, Schmutz, p. 1058, Sitzber. Akad. Wiss., cxxii, 1913. On
banana fruit.....Peradeniya. Ceylon.
- K. ceylonicus*, Bagnall, p. 290, A. M. N. H., xiii, 1914. Ceylon. (See p.
219, A. M. N. H., i, 1918 for synonymy.)

Idolothrips, Haliday

- I. halidayi*, Newman, p. 265, T. E. S. 1855 on *Anacardium. sp.*.....Mysore.
- I. Schenklingi*, Karyn, p. 189, Ent. Mittel, ix, 1920. Puttalam. Ceylon.

MEGATHRIPIDÆ

Bactridothrips, Karyn

- B. serraticornis*, Bagnall, p. 397, A. M. N. H., viii, 1921, described from one
male only.....Pundaluoya. Ceylon.

HYSTRICOTHYRIDÆ

Leeuwenia, Karyn*

- L. (Paneurothrips) coriaceus*, Bagnall, p. 216, A. M. N. H., ix, 1912.
.....Dehra Dun (N. India) ; see also p. 640, R.M.N.H., xiv., 1924.
- L. indicus*, Bagnall, p. 377, A. M. N. H., xiv, 1914 Moulmein, Burma.
- L. engeniae*, Bagnall, p. 640, A. M. N. H., xiv, 1924, on *Eugenia*. Kodai-
kanal, Pulney Hills.

* The author has since noted and described a new species of each of these
genera in this Journal, see p. 788.

The following is a list of the new forms, described in the forthcoming paper of Dr. Karny on Indian Thysanoptera.

Terebrantia

1. Hydatothrips ramaswamiah, *n. sp.*
2. Trypactothrips mundus, *n. sp.*
3. Ayyaria chaetophora, *n. gen* and *sp.*
4. Mycerothrips setiprivus, *n. sp.*
5. Anaphothrips oligochaetus, *n. sp.*
6. *A. ramakrishnae, n. sp.*
7. Stylothrips brevipalpis, *n. gen* and *sp.*
8. Ramaswamiahella? subnudula *n. gen* and *sp.*

Tubulifera

1. Rhynchothrips pallipes, *n. sp.*
2. Dolichothrips ochripes, *n. sp.*
3. Haplothrips ramakrishnae, *n. sp.*
4. Trichothrips hadrocerus, *n. sp.*
5. Eothrips floriiperda, *n. sp.*
6. Androthrips ramachandrai, *n. sp.*
7. Mesothrips melinocnemis *n. sp.*
8. *M. apatelus, n. sp.*
9. Ramakrishnaiella unispina, *n. gen.* and *sp.*
10. Gynaikothrips interlectus *n. sp.*

LIST OF REFERENCES CITED IN THE LIST

- Bagnall, R. S. ... Transactions of the Natural History Society, Northumberland, 1908.
- „ ... Records of the Indian Museum, Calcutta, 1912.
- „ ... Annals and Magazine of Natural History from 1908 onwards.
- „ ... Bulletin of Entomological Research, London.
- Hood, J. D. ... Proceedings of the Entomological Society of Washington, xiv, 1914.
- „ ... Proceedings of the Biological Society of Washington, 1915.
- „ ... Insector, Insectiae Menstruns-Washington, 1913, 1919.
- „ ... Psyche, Philadelphia, xxiii, 1916.
- Karny, H. H. ... 'Treubia,' Buitenzorg, Java, vols. i to iii, 1921-24.
- „ ... Philippine Journal of Science Manilla, xvii, 1920.
- „ ... Entomologische Mitteilungen, Berlin, ix, 1920.
- „ ... Journal of Siam Society, xvi, 1923.
- Kieffer ... 'Marcellia.'
- Newman ... Transactions of the Entomological Society, London, 1856.
- Schmutz, K. ... Sitzungsberichte der Kaiser. Akademie der Vienna, cxxii, 1913.
- Uzel, H. ... Monographie der Ordnung Thysanoptera, Königgratz, 1895.
- Walker, G. ... Annals and Magazine of Natural History, London, 1859.
- Williams, C. B. ... Bulletin of Entomological Research, London, 1915.